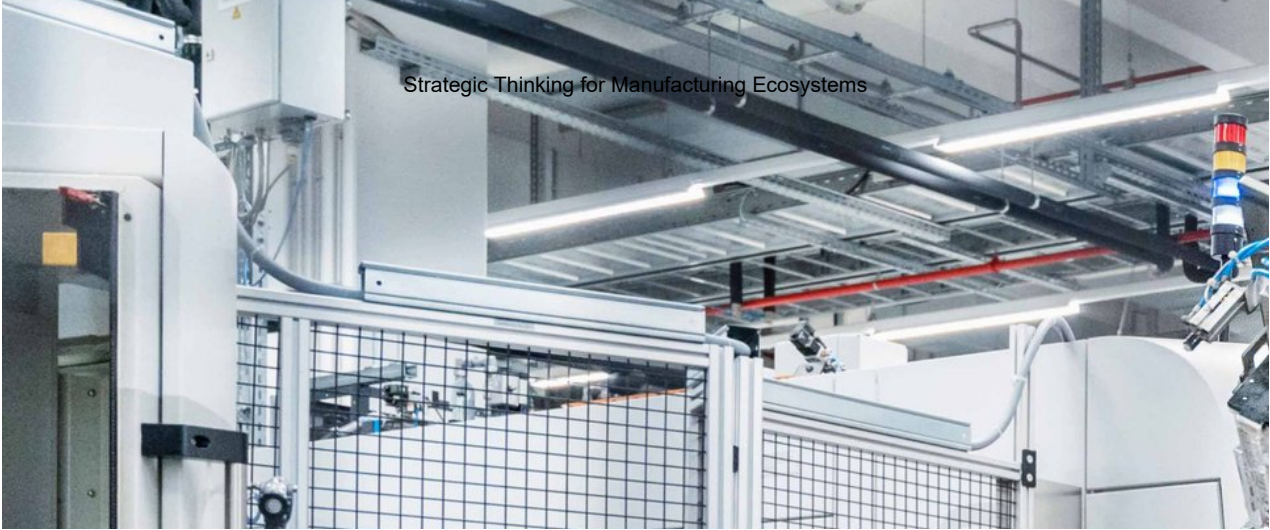




Strategic Thinking for Manufacturing Ecosystems



If people say your manufacturing firm is operating in an ecosystem, what does that mean? Actually, it means quite a lot. It has far-reaching consequences for how you need to think about strategy.

What is a manufacturing ecosystem?

The concept of ecosystem has gained a lot of traction in research in management recently. As always, there are many definitions, however, it is derived from biology, where it is used to refer to the nutrient and energy flows that exist between organisms and between organisms and their environment. A useful way of thinking about an ecosystem in a business context is that, in abstract terms, it is an assortment of activities that generates complex functionality for a system of use. For example, consider how you use your mobile phone in the many ways that you do. You use it for social media, geographical navigation, listening to music, searching for information, texting, and sometimes even for making a phone call. This is complex functionality. Complex functionality more and more defines what end-users see as delivering value.

This complex functionality is supplied by a product/service bundle that involves many firms and other organisations making ² contributions. With mobile

phones, this bundle comes as a subscription. This subscription offers a bundle that gives you a phone with quite a bit of software already installed, connectivity delivered by a network of transmitters, a finance deal by which you pay off the phone, a bricks & mortar shop or a website where you take out the subscription, and a call-centre where you can be put on hold.

There are also additional products and services that can be monetised like more apps, headphones and phone cases. This product/service bundle requires quite a large assortment of activity to get it set up and functioning at a level where you decide to pay money for it. It is the combination of all these contributions that creates the value that you want. The bundling that is required to create this value is referred to as complementarity.

Complementarity refers to the effect where a combination of products and services offers more value than each of these products and services when delivered separately.

The reason why ecosystems are becoming important for manufacturing firms is that more and more they find themselves being part of it. As part of all the activity that generates a product/service bundle, there are manufacturing firms making contributions, and hopefully making money. With ecosystems, whether manufacturing firms make money is not a matter of being agile or lean any more. What becomes more salient is being allowed to supply into or to complement everything else that is part of the bundle.

How does an ecosystem function?

There are three concepts that are important for our understanding of how an ecosystem functions: appropriation, capability, and governance.

Appropriation is about who gets the money. With mobile phones, money is made by end-users paying a subscription fee over a specified period. End-users take out a contract on a monthly direct debit for a year or two. Appropriation is about where this money goes. This also applies for additions to this bundle for which end-users have to pay extra. The total value of each contract is divided up among the many contributors. Mobile phone makers such as Apple and Samsung get a bit, as do the network operators such as EE and O2, the finance companies, the firms in the Far East who assemble the phones, various manufacturers of components that go into a phone, and also the firms that design and install the equipment that keeps the mobile phone signal up in the airwaves, and then there are the firms that write and maintain the software. Everybody gets a slice of the pie. Overall, an ecosystem has an appropriation regime in place by which some organisations get a lot of money out of it and others just a little.

The amount of money a firm can make or even whether it is allowed to contribute at all depends on its capabilities. Each activity that is necessary to generate the product/service bundle requires know-how, technology, and organisation, in other words firms knowing how to deliver their stuff. Some of this capability is unique to one firm and is carefully guarded like the operating system in an iPhone. Other capabilities are generic and relatively easy to produce like making the tiny screws that holds a phone together. Understanding the levels of uniqueness of each contribution provides an important clue regarding where the money goes.

Ironically, firms not only compete about who is allowed to contribute, they also must cooperate. If they don't cooperate, the product/service bundle will not come together. This dual requirement of cooperation and competition is labelled as co-opetition. An ecosystem

must have a capability configuration by which the complex functionality can be generated.

How an ecosystem deals with co-opetition is a matter of governance. Governance refers to how all activities are coordinated within and between the many contributors in an ecosystem. Many activities are conducted within a single firm and governance then is a matter of how this firm is organised, while other activities are coordinated through the market mechanism in that things come together by trading on an open market. Yet, more and more often there are many intermediate inter-organisational relationships that can take on many different forms like preferred supplier arrangements, exclusive contracts, strategic alliances, or joint ventures. A specific arrangement is known as a platform, like Apple iOS or Android, which by way of technical and organisational requirements prescribes how activities must come together. Apple is the proprietor of its own platform and therefore has a rather powerful position. Android is owned by a separate organisation that is responsible for setting the standards. Here, power is more devolved between its members, though some companies, like Google or Samsung in this example, are quite dominant.

Standard-setting is another way of achieving coordination with some standards having appeared organically while others have dedicated bodies tasked with setting and maintaining them. All in all, an ecosystem has a specific governance structure by which competition and cooperation is organised.

The amount of money a firm is able to appropriate, the capability it is allowed to contribute, and the nature of the relationships it has are interdependent.

Appropriation depends on a firm's capability and how essential it is for the ecosystem, and the relationships it

is maintaining. A firm's capability tends to develop with how much money it can appropriate and how it relates to other firms and their capabilities. Relationships and how these take shape, are informed by a firm's position in the appropriation regime and how its capability compares with other capabilities that are out there.

Strategy for surviving in an ecosystem

There will be a specific arrangement in place with each ecosystem, which includes an appropriation regime, a capability configuration, and a governance structure. Consequently, there are two levels of strategic thinking. The basic level of strategic thinking is about how the firm is positioned within the existing arrangement and whether it makes the most of it. This is about exploiting the capabilities that the firm has, developing the interorganisational relationships that it needs, and appropriating as much money as it can. In doing this it is not uncommon that a firm is contributing to several different ecosystems. Tiny screws hold more devices together than just mobile phones. Computer games can be played on phones but also on game consoles and home computers.

Most manufacturing firms tend to have the strategic management capability that allows them to understand how to survive within the existing arrangement. It boils down to gathering information about how the ecosystem functions, who makes most of the money and why, what capabilities are required to generate the complex functionality, and how relationships between all ecosystem members have taken shape. A firm can then plan to position itself within that arrangement in the best way possible, adopting a role as supplier, complementor, or platform leader while simultaneously deciding whether to compete on cost_o or on value. However, many manufacturing firms find that ecosystem arrangements

have developed into a vicious circle in that it predominantly is about competing on price. It has been known for many years that price-based competition regardless of the interorganisational arrangement in place is eventually bad for everybody.

The advanced level of strategic thinking is about the ecosystem itself and how it develops. Ecosystems by their nature are unstable. The arrangement by which they function is prone to change as firms try to improve their position. Firms try to improve their position by initiating and pressing for innovation that changes or adds to the complex functionality that the ecosystem generates. This innovation takes the form of developing new and better capabilities, creating different and new interorganisational relationships, and cultivating alternative appropriation regimes. Alternatively, a firm might find that these initiatives are happening already, initiated by another member of the ecosystem. It then must decide whether to go with the change or to try to resist it, or a firm can decide to be the instigator of such an initiative.

A popular remedy for escaping the vicious circle of competing on price for manufacturing firms is to embark upon servitization. Whether this is a viable option and what it would take to pull this off can be assessed by appreciating it from an ecosystem perspective. Any initiative and innovation - including a move into servitization - can be assessed in terms of how it could affect the capability configuration, the governance structure, and the appropriation regime of the ecosystem, and whether this benefits or disadvantages the firm. Moreover, a move into adding services to the contribution that a firm makes to the ecosystem will generate reactions. If the added services are seen as posing a competitive threat by other ecosystem members, some form of retaliation can be expected. A

different reaction will occur if these added services are complimentary or add to the overall complex functionality that the ecosystem produces in a way that it is valued by the end-users. If these added services also mean a move into developing a subscription model, then servitization means a change to the governance structure needs to be made.

Initiatives like servitization or other innovations take time to develop, with the outcome taking shape over time rather than having an initial design adopted unchanged, especially as their success involves changes to the ecosystem. This requires a strategic management capability that moves away from strategic planning. It is well-known that planning works best in situations that are relatively stable, but becomes meaningless in situations where the future is largely unknown. The strategic management capability required to deal with the ongoing change that is a feature of ecosystems is better described as *wayfinding* rather than *planning*. If strategic planning is about thinking before acting, anticipating and solving problems before they arise, and tracking progress through pre-defined key performance indicators, then wayfinding is more about experimenting and acting to fuel thinking, solving problems when they arise, and tracking progress through developing and enhancing understanding.

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